

Date: Sat, 14 Aug 93 04:30:16 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V93 #10
To: Ham-Homebrew

Ham-Homebrew Digest Sat, 14 Aug 93 Volume 93 : Issue 10

Today's Topics:

 10 Gig antennas (3 msgs)
 PSU power factor correction (3 msgs)
 Spanner wrench needed for recessed BNC connectors (3 msgs)

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 13 Aug 1993 16:56:29 GMT
From: haven.umd.edu!darwin.sura.net!howland.reston.ans.net!sol.ctr.columbia.edu!
news.columbia.edu!cunixf.cc.columbia.edu!mac20@ames.arpa
Subject: 10 Gig antennas
To: ham-homebrew@ucsd.edu

10 Gig parabolic dishes are hard to come across (for a hobbist's
money) and constructing one is rather difficult.
I know there's a type of dish out there that uses azimuthal concentric rings
that seems like it would be easier to construct.
Can someone tell me the name of this type of antenna and how
it stacks up compared to the same size diameter parabolic dish?
perhaps a reference or two would be helpful.

As a source of the parabolic shape i thought of using one of those simple
security or driveway type parabolic mirrors, preferably just shiny
stainless or aluminum. Has anyone done something like this?

Thanks,
Mike

KF2NV
Applied Physics Department
Columbia University

Date: Fri, 13 Aug 1993 18:02:34 GMT
From: elroy.jpl.nasa.gov!sdd.hp.com!col.hp.com!news.dtc.hp.com!srngenprp!
glenne@ames.arpa
Subject: 10 Gig antennas
To: ham-homebrew@ucsd.edu

Michael A Cecere (mac20@cunixf.cc.columbia.edu) wrote:

: As a source of the parabolic shape i thought of using one of those simple
: security or driveway type parabolic mirrors, preferably just shiny
: stainless or aluminum. Has anyone done something like this?

Mike

I haven't tried those but if it works well optically it's pretty sure to
work at 10 GHz. However, watch out that the F/D is appropriate and within
the range of the feedhorn you use.

As far as I know, the small solid spun dishes are still available and
only somewhat more expensive than \$1/inch.

See either the Dec '89 HR article or the Handbook for mounting and feed
details.

I think that

The Antenna Center
505 Oak Street
Calumet, Michigan 49913
906.337.5062

still works. It seems like someone told me they had recently gotten some
antennas from them.

73
Glenn Elmore n6gn

N6GN @ K3MC
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

Date: 13 Aug 1993 18:51:59 GMT
From: pa.dec.com!kali.enet.dec.com!wade@decwrl.dec.com
Subject: 10 Gig antennas
To: ham-homebrew@ucsd.edu

>Article 428 of rec.radio.amateur.homebrew:
>Subject: 10 Gig antennas

>10 Gig parabolic dishes are hard to come across (for a hobbist's
>money) and constructing one is rather difficult.

well \$29 for a 2 foot dish from Satelllite City might be a lot...

>I know there's a type of dish out there that uses azimuthal concentric rings
>that seems like it would be easier to construct.
>Can someone tell me the name of this type of antenna and how
>it stacks up compared to the same size diameter parabolic dish?
>perhaps a reference or two would be helpful.

>

>As a source of the parabolic shape i thought of using one of those simple
>security or driveway type parabolic mirrors, preferably just shiny
>stainless or aluminum. Has anyone done something like this?

>

They might work, if the surface is parabolic to within about 1 mm.

some other ideas:

1. Horns are easy to make. I wrote a small program that generates a PostScript template for horns with gain between 10 and 25 dB. tape the template to sheet metal, cut it out, and fold it up.
2. Lens antennas are fairly easy to make, using Styrofoam and aluminum foil. The lens goes in front of a horn for additional gain.
3. The cover of a 100 pound propane tank is an almost perfect parabola, 14 inches in diameter with $f/d = 0.6$. N1IOL and friends have molded several dishes from a lid liberated from a tank.

We have used all of these successfully in past 10GHz contests for contacts in excess of 100 km., and will be out again next weekend (Aug 21-22).

>Thanks,
>Mike
>KF2NV
>Applied Physics Department
>Columbia University

send mail for details on any of the above.

paul N1BWT

Date: 13 Aug 93 16:42:43
From: dog.ee.lbl.gov!overload.lbl.gov!agate!doc.ic.ac.uk!uknet!ukc!
eagle.ukc.ac.uk!ali@network.ucsd.edu
Subject: PSU power factor correction
To: ham-homebrew@ucsd.edu

I have a ham radio amplifier (DenTron DRT2000L) with a power supply in the 1 to 2KW region. With 240V mains, the transformer magnetising current is 1A rms (90 degrees out of phase with the voltage, measured with a clamp-type current transformer and scope). The full-load current is around 10A, though it is hard to give a meaningful value because the diodes/capacitors on the secondary distort the waveform.

First question: is this value of magnetising current 'reasonable'?
10% of the full-load value seems a lot to me.

Second question: can I add a 'motor run' type of capacitor in parallel with the transformer primary to tune out the inductance and save on the electricity bill? Are there bad side effects when 2 KW pulses are drawn from the secondary as I shout into the microphone or key morse code?

Alan G3XAQ

Date: Fri, 13 Aug 1993 19:41:06 GMT
From: sdd.hp.com!col.hp.com!news.dtc.hp.com!srngenprp!alanb@network.ucsd.edu
Subject: PSU power factor correction
To: ham-homebrew@ucsd.edu

A.L.Ibbetson (ali@ukc.ac.uk) wrote:

: I have a ham radio amplifier (DenTron DRT2000L) with a power supply in
: the 1 to 2KW region. With 240V mains, the transformer magnetising
: current is 1A rms (90 degrees out of phase with the voltage, measured
: with a clamp-type current transformer and scope). The full-load
: current is around 10A, though it is hard to give a meaningful value
: because the diodes/capacitors on the secondary distort the waveform.

: First question: is this value of magnetising current 'reasonable'?
: 10% of the full-load value seems a lot to me.

Is the filament winding on the same transformer? That could account for some of the current. Otherwise I agree 1A seems a bit high.

: Second question: can I add a 'motor run' type of capacitor in parallel with the transformer primary to tune out the inductance and save on the electricity bill?

I don't think it would have much effect on the electricity bill. My understanding is that the electric company's power meter responds to true load power (watts), taking power factor into account.

: Are there bad side effects when 2 KW pulses are drawn from the secondary as I shout into the microphone or key morse code?

Assuming your branch circuit is rated for the peak current, I don't see any problem. Be aware that 2 kW delivered to the load (tube) will require much more than 2 kilovolt-amperes drawn from the primary. Some of this is due to transformer efficiency, but the main problem is power factor. In this case, "power factor" does not refer to a phase difference between voltage and current (caused by an inductive load, for example). Rather, it is caused by the fact that the current drawn from the primary is not sinusoidal. With a capacitor-input filter, the current flows in short pulses at the peaks of the voltage waveform. Average $E \times I$ (volt-amperes) is much higher than the output power.

Since fuses and circuit breakers respond to RMS current (not power), the circuit must be rated for much higher current than would be expected from the load power. For example, an amplifier that runs 2 kW input power might draw 2.4 kW from the 240V supply, which would imply 10 amps. However in practice, a 20A breaker is marginal -- a 30A circuit is normally recommended.

Some switching power supplies these days include "power factor correction" circuitry which forces the input current to be approximately sinusoidal. What ham manufacturer will be the first to include this in their high-power amplifiers?

AL N1AL

Date: 14 Aug 1993 00:59:28 GMT
From: swrinde!cs.utexas.edu!wupost!news.miami.edu!usenet.ufl.edu!eng.ufl.edu!
helios.tcad.ee.ufl.edu!thoman@network.ucsd.edu
Subject: PSU power factor correction
To: ham-homebrew@ucsd.edu

In article <5569@eagle.ukc.ac.uk>, ali@ukc.ac.uk (A.L.Ibbetson) writes:

|> I have a ham radio amplifier (DenTron DRT2000L) with a power supply in
|> the 1 to 2KW region. With 240V mains, the transformer magnetising
|> current is 1A rms (90 degrees out of phase with the voltage, measured
|> with a clamp-type current transformer and scope). The full-load
|> current is around 10A, though it is hard to give a meaningful value
|> because the diodes/capacitors on the secondary distort the waveform.
|>
|> First question: is this value of magnetising current 'reasonable'?
|> 10% of the full-load value seems a lot to me.

Well, it isn't unreasonable. Naturally, you'd like it to be
as small as possible.

|> Second question: can I add a 'motor run' type of capacitor in parallel
|> with the transformer primary to tune out the inductance and save on the
|> electricity bill? Are there bad side effects when 2 KW pulses are
|> drawn from the secondary as I shout into the microphone or key morse
|> code?

First, it won't save you anything on your electric bill, since
the typical residential power meter measures watts, not VAR's (your
power meter will register the transformer's core loss, but you can't
do anything about that unless you find a more efficient transformer).

Also, if you hang a capacitor on the primary you'll be creating
a dual-tank circuit involving power line impedance, transformer
leakage inductance, and the capacitor. This may yield undesirable
(and at your power levels, potentially damaging) oscillation when
excited. Unfortunately, I know enough to see the hazard, but not
enough to tell you how to circumvent it...

Next Respondent?

Greg Thoman: The opinions expressed herein are mine alone, and I am
solely irresponsible for them.

Date: 13 Aug 1993 09:35:16 -0400
From: bloom-beacon.mit.edu!ai-lab!bronze.lcs.mit.edu!not-for-mail@uunet.uu.net
Subject: Spanner wrench needed for recessed BNC connectors
To: ham-homebrew@ucsd.edu

I've volunteered (once again) to fix my friend's HT, a Yaesu 727. Like
most (if not all) HT's, this one has a recessed BNC connector with a
retaining ring that needs to be unscrewed before I can take the cover off.
I need a spanner wrench to do this right, and I haven't found one.
Anyone have an idea? I'd like to get this over and done with very

soon before my friend loses patience.

Thanks and 73's, Dave, N1KGH

--

David Moisan, N1KGH	/^_\/^\	moisan@silver.lcs.mit.edu	
86 Essex St. Apt #204	(o ^ o)	n1kgh@amsat.org	
Salem. MA 01970-5225		ce393@cleveland.freenet.edu	

Date: 13 Aug 1993 11:01:42 -0400
From: pravda.sdsc.edu!news.cerf.net!usc!howland.reston.ans.net!
europa.eng.gtefsd.com!eddie.mit.edu!news.intercon.com!panix!not-for-
mail@network.ucsd.edu
Subject: Spanner wrench needed for recessed BNC connectors
To: ham-homebrew@ucsd.edu

In article <24g5ak\$sak@bronze.lcs.mit.edu>,
David Moisan <moisan@bronze.lcs.mit.edu> wrote:
>I've volunteered (once again) to fix my friend's HT, a Yaesu 727. Like
>most (if not all) HT's, this one has a recessed BNC connector with a
>retaining ring that needs to be unscrewed before I can take the cover off.
>I need a spanner wrench to do this right, and I haven't found one.
>Anyone have an idea? I'd like to get this over and done with very
>soon before my friend loses patience.

I could swear I saw one in the Techni-Tool catalog recently, but it's
at home right now and I am not ...

--

Mike Schuster		schuster@panix.com		70346.1745@CompuServe.COM
-----		schuster@shell.portal.com		GEnie: MSCHUSTER

Date: 13 Aug 1993 20:41:55 GMT
From: pravda.sdsc.edu!news.cerf.net!usc!howland.reston.ans.net!darwin.sura.net!
news-feed-2.peachnet.edu!hobbes.cc.uga.edu!aisun1.ai.uga.edu!
mcovingt@network.ucsd.edu
Subject: Spanner wrench needed for recessed BNC connectors
To: ham-homebrew@ucsd.edu

If you mean a wrench like an optical spanner, try any camera store that
can special-order Kalt accessories. Or try the ads in Shutterbug.
Or try the Edmund Scientific catalog.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *****
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

End of Ham-Homebrew Digest V93 #10
